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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO
10/036,148	12/26/2001	Stanley W. Stephenson	83915RLO	3959

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EXAMINER
QI, ZHI QIANG

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 03/14/2003

Please find below and or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
10/036,148	STEPHENSON, STANLEY W.
Examiner	**Art Unit**
Mike Qi	2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-10 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-10 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.

4)☐ Interview Summary (PTO-413) Paper No(s). _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 7, recitation "... a nonconductive, field spreading layer having a transparent electrically conductive polymer dispersed sub-micron particles disposed between ..." is indefinite. Because the field spreading layer is a polymer layer with particles, and the material is a polymer. In the claims, the field spreading layer having transparent electrically conductive dispersed sub-micron particles that means the field spreading layer is a conductive material. However, in the claims written "a nonconductive field spreading layer" that is contradicted with the conductive material. How a conductive material can be a nonconductive layer. Even though the material has a high resistance, but the material still is a conductive material. For examination purpose, it is interpreted, as the field spreading layer is a polymer material having particles, and actually that is a polymer layer. Because the claim 2 describes the liquid crystal and the particles are used in the same polymer.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2 and 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art in view of US 6,211,931 (Fukao et al) and US 0038912 (Broer et al).

Claims 1 and 7, Applicant admitted prior art (Fig1A) discloses a structure of a display sheet having polymer dispersed liquid crystal comprising:

- a flexible substrate (15);
- a state changing layer is formed by coating a polymer dispersed cholesteric layer (30) disposed over the substrate (15) and defining first and second surfaces, and application of electrical fields of various intensity and duration can drive the cholesteric material (30) into a reflective state or a transmissive state;
- a first conductor (20) disposed over the first surface of the state changing layer (30);
- a second conductor (40) on the second surface of the state changing layer (30) so that when a field is applied between the first and second conductors (20,40), the liquid crystals (30) change state.

Applicant admitted prior art does not expressly disclose the filed spreading layer (polymer material with particles) having transparent electrically conductive polymer dispersed sub-micron particles dispersed between the state changing layer and first conductor.

However, Fukao discloses (col.7, line 10 – col.8, line 18;Fig.1) a structure of a polymer dispersed liquid crystal display forming a transparent polymer monolayer (20) interposed between the polymer dispersed liquid crystal layer (18) and the first electroconductive film (12), and this can drastically improve adhesive of the polymer dispersed liquid crystal layer (18) and the first electroconductive film (12). If no such polymer monolayer (20) is used, the polymer dispersed liquid crystal layer (18) can not be attached to the electroconductive film (12) with sufficient adhesive force, because the different wettability between the surface of the first electroconductive film (12) and the surface of the polymer dispersed liquid crystal layer (18), would cause intrusion of air babbles into the space between the polymer dispersed liquid crystal layer (18) and the first electroconductive film (12) and blemish the surface.

Broer discloses (paragraph 0176] that the polymer dispersed liquid crystal (PDLC) filled particles (polymer particles) so as to improve the contrast of the display.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use a transparent polymer layer (polymer material with particles) as claimed in claims 1 and 7 for preventing the surface blemish

and obtaining sufficient adhesive between the polymer liquid crystal layer and the conductor so as to improve the display contrast.

Claim 2, Fukao discloses (col.7, lines 33 – 42) that preferably, using the same polymer for polymer dispersed liquid crystal (30) and the polymer monolayer (20). Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use the same polymer for the liquid crystal and the particles as claimed in claim 2 for simplifying the manufacture process.

Claim 5, Fukao discloses (col.5, lines 12-18) that the refractive index of the polymer and the refractive index of the liquid crystal agree each other would improve the transparency. Such that, the different materials having the same refractive index would improve the transparency, because the light would have the same refraction, and that is a conventional. Therefore, the refractive index of the first conductor (ITO) and the refractive index of the field spreading layer (polymer) are substantially the same as claimed in claim 5 would improve the light transparency, and that is a conventional.

Claim 6, Broer discloses (paragraph 0161) that the material of polythiophene is an organic electrically conducting polymer material, and such conducting polymers in particular have advantages of being obtainable using a wet deposition method. Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use the polymer dispersed sub-micro particles having polythiophene as claimed in claim 6 for being obtainable using a wet deposition method.

Claims 4 and 8, the manufacture process is performed step by step that needs to put the product in a web and sequentially moved through one or more stations, and that would sequentially or simultaneously deposit the layers (state changing layer or field spreading layer), and that is a conventional manufacture process performed for a device, and that would have been at least obvious.

Claim 9-10, Applicant admitted prior art (Fig.1A) discloses that, typically, the ITO (indium-tin-oxide) is sputtered to form the first transparent conductor (20), and the first conductor (20) and the second conductor (40) are patterned to form an addressable matrix.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art, Fukao and Broer as applied to claims 1-2, 4-10 above, and further in view of US 6,043,856 (Stephenson et al).

Stephenson discloses (col.2, lines 22-56) that a liquid crystal layer (50) having dispersed liquid crystal (60) in a binder (70), and conventionally, the binder (70) is gelatin. Therefore, the polymer dispersed liquid crystal needs to use binder, and using gelatin as the binder to form the polymer is a conventional.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703) 308-6213.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Mike Qi
March 10, 2003